

5-1-2006

Developmental and Gender Patterns in Social Information Processing: Social Problem-Solving and Social Goals

April Bowersox
Western Kentucky University

Follow this and additional works at: <http://digitalcommons.wku.edu/theses>



Part of the [Education Commons](#), and the [Psychology Commons](#)

Recommended Citation

Bowersox, April, "Developmental and Gender Patterns in Social Information Processing: Social Problem-Solving and Social Goals" (2006). *Masters Theses & Specialist Projects*. Paper 443.
<http://digitalcommons.wku.edu/theses/443>

This Thesis is brought to you for free and open access by TopSCHOLAR®. It has been accepted for inclusion in Masters Theses & Specialist Projects by an authorized administrator of TopSCHOLAR®. For more information, please contact connie.foster@wku.edu.

DEVELOPMENTAL AND GENDER PATTERNS IN
SOCIAL INFORMATION PROCESSING:
SOCIAL PROBLEM-SOLVING AND SOCIAL GOALS

A Thesis
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Specialist in Education

By
April Lee Bowersox

May 2006

DEVELOPMENTAL AND GENDER PATTERNS IN
SOCIAL INFORMATION PROCESSING:
SOCIAL PROBLEM-SOLVING AND SOCIAL GOALS

Date Recommended 4-21-06

Elizabeth L. Lemus
Director of Thesis

Carl L. Myers

Dan L. R.

Elmer Gray 5/17/06
Dean of Graduate Studies and Research Date

Acknowledgments

I would like to thank my friends and family who have given me the unwavering encouragement and support needed to achieve my goals, both personal and professional. I would like to thank my dad, Tim, and my sister, Lisa, for their strong foundation of love and support. You have kept me smiling and laughing at times when I felt overwhelmed or downtrodden.

I would also like to thank the members of my thesis committee. To Dr. Elizabeth Lemerise, you have been the guiding force behind this project and I owe so much of its success to you. You introduced me to the world of research and its many possibilities; I thank you for that and your friendship. To Dr. Carl Myers, thank you for your meticulous attention to detail! Your guidance in the field of school psychology has shaped my professional life and I value you as a teacher, mentor, and friend. To Dr. Dan Roenker, thank you for your helpful instruction on statistical procedures and your flexibility. I would also like to acknowledge Dr. Joe Bilotta, who served as a member of this thesis committee before his passing this year. Dr. Bilotta's approach to research was inspiring and he always had a way of explaining the most complex concepts in a way that could be understood by anyone. His instruction was beneficial throughout my undergraduate and graduate career to this project, and it will be carried on with me.

Finally, I would like to thank the administrators, teachers, and children of the Bowling Green City and Warren County School Systems who allowed these data to be collected. I would also like to thank all of the graduate and undergraduate students in the Social Developmental Lab at Western Kentucky University. This project could not have been completed without time and energy you have dedicated.

Table of Contents

| | |
|---------------------------------|----|
| List of Tables and Figures..... | v |
| Abstract | vi |
| Introduction | 1 |
| Method | 23 |
| Results | 28 |
| Discussion..... | 44 |
| References..... | 51 |
| Appendixes | 57 |

List of Tables and Figures

| | | |
|----------|--|----|
| Table 1 | Goal Type by Grade Chi Square for Happy Provocateurs..... | 34 |
| Table 2 | Goal Type by Grade Chi Square for Sad Provocateur..... | 35 |
| Table 3 | Goal Type by Grade Chi Square for Angry provocateurs | 36 |
| Table 4 | Goal Type by Gender Chi Square for Fifth Grade: Sad Provocateurs | 38 |
| Figure 1 | Interaction between emotion display and grade level for the revenge goal..... | 30 |
| Figure 2 | Interaction between gender and grade level for the revenge goal | 32 |
| Figure 3 | Interaction between emotion display and gender for the mean number of aggressive responses boys and girls across emotion display | 40 |
| Figure 4 | Interaction between grade and gender for the mean number of aggressive responses boys and girls had across grade | 42 |
| Figure 5 | Interaction of the grade and gender for the mean hostility/friendliness of children's problem-solving responses..... | 43 |

DEVELOPMENTAL AND GENDER PATTERNS IN SOCIAL INFORMATION
PROCESSING: SOCIAL PROBLEM SOLVING AND SOCIAL GOALS

April Bowersox

May 12, 2006

61 Pages

Directed by: Elizabeth Lemerise, Carl Myers, and Daniel Roenker

Department of Psychology

Western Kentucky University

The purpose of this study was to examine patterns of development and gender in first- through fifth-grade children's ($N = 514$) social information processing, as well as the role emotion plays in these patterns. Developmental patterns and goal selection have been relatively understudied in past social information processing literature. Videotaped ambiguous provocations were presented in which provocateur's emotion displays were manipulated (two each of happy, angry, and sad); children imagined being the provocateur's victim. Results revealed age and gender differences in children's goal selection and social problem-solving. Provocateur's emotion displays were also found to influence goal selection and problem-solving in children, further supporting the role of emotion in social information processing.

CHAPTER 1

Introduction

Social Competence and Social Problem-Solving

Over the past two decades, there has been an increase in research seeking to describe the processes involved in the development of social competence. Much of the research has focused on the critical importance of social, cognitive, and emotional developmental factors influencing the individual child in his or her success in interpersonal relationships. According to Welsh and Bierman (1998), social competence is the broader term used to describe a child's social effectiveness. As Dodge, Pettit, McClaskey, and Brown (1986) point out, however, authors have offered many definitions of this construct.

Hubbard and Coie (1994) describe social competence as being well-liked by peers and having the ability to effectively influence and direct the activities of peers. Anderson and Messick (1974), on the other hand, define social competence as the ability to be "effective in the realization of social goals" (p. 282). Siegler, Deloache, and Eisenberg (2003) also state that children who are able to effectively achieve personal goals in social interactions while still being able to maintain positive relationships with their peers are said to be socially competent. Hubbard and Coie's definition concurs with these other authors, in that the key criteria for defining social competence are the social outcomes and success that children achieve, such as having friends, being considered popular by peers, and having effective social interactions with peers. These outcomes have been the focus of the peer relations researchers who determine the social status of an individual child by asking children to nominate the liked, disliked, aggressive, or shy members of

their class as well as the degree to which they like other members of their class (Asher, 1990). From this, researchers are able to identify which children are most socially competent by determining which children are liked, disliked, ignored, or rejected by their peers.

As many indicate, however, another dimension of social competence focuses on the social problem-solving skills that are essential to socially competent behavior (Crick & Dodge, 1994; Hubbard & Coie, 1994; Welsh & Bierman, 1998). Social problem-solving refers to the “ability to generate alternative solutions to social interaction problems, evaluate the possible consequences, and choose the most effective solution to the problem” (Dubow, Tisak, Causey, Hryshko, & Reid, 1991, p. 585). Furthermore, Dubow and colleagues assert that the development of such skills creates ongoing opportunities for satisfying interactions and experiences with peers, which are critical for an individual to be considered socially competent and for the further development of social competence.

Children engage in many forms of problem-solving across various settings with numerous peers and adults. Social problem-solving may involve simple situations that can be quickly resolved such as whether to play hide-and-seek or soccer at recess or whether or not to share school supplies with a friend. However, other issues can involve more socially complex or complicated situations, such as how to become part of the popular crowd or how to avoid trouble with a bully. Children’s problem-solving behaviors, then, can be understood as an effort to resolve issues (simple or complex) in order to get along with others and accomplish personal social goals, leading to the achievement of social competence (Fraser, Nash, Galinsky, & Darwin, 2000).

With such variety in social problems, children obviously employ a multitude of problem-solving techniques when confronted with conflict (Murphy & Eisenberg, 2002). Murphy and Eisenberg observed that children use non-abusive verbal objections such as insistence; verbal methods such as explanations, venting, and adult-seeking; avoidance techniques such as ignoring a peer's requests; and physical as well as verbal aggression. These strategies are not mutually exclusive, and it is common to use many strategies at once if presented with a complex social situation. Murphy and Eisenberg also report that problem-solving skills can be either constructive or destructive. They can be constructive in the sense that they de-escalate the situation and are non-threatening tactics that generally have a positive impact on the situation. Destructive skills tend to escalate the conflict and tend to have a negative impact on the interaction.

Decades of research on the critical factors that constitute social competence in children has demonstrated that children's success or failure in being accepted by their peers is established partly through their social problem-solving skills (Burks, Laird, Dodge, Pettit, & Bates, 1999; Dodge & Price, 1994; Renshaw & Asher, 1983). Research investigating outcomes of children with varying degrees of social competence and social problem-solving skills, then, is of critical importance to improving the understanding of and the ability to teach children the appropriate skills they need to succeed amongst their peers.

Demonstrating socially competent behaviors in social interactions, whether or not they are conflict-related, is important in determining success in peer relationships. Children who display highly aggressive or disruptive behavioral and problem-solving responses more often have a social status that is rejected and are less often considered

popular by peers (Coie, Dodge, & Kupersmidt, 1990). Children who are shy and withdrawn and do not demonstrate socially competent behaviors are also more likely to be rejected by peers in the later elementary years. Being rejected or less accepted by peers, especially if the child is aggressive as well, puts these less socially competent children at a disadvantage later on in life, as these peer relationships serve significant functions in children's lives and development.

Research by Pettit, Dodge, and Brown (1988) has shown that social competence in the classroom is associated with the ability to generate many highly relevant and prosocial solutions to common social problems (e.g., making friends with a new classmate or getting a desired object from a classmate). Similarly, Crick and Ladd (1990) found that popular, and by definition more socially competent, children expect more favorable and positive outcomes from social interactions and engage in more "norm-setting activities" (p. 615) such as reminding others of the rules. These findings demonstrate the role of social competence and success in the classroom, which is important when considering the role a successful school experience (peer- or academic-related) plays in the later adjustment of a child.

Understanding the development of and factors contributing to social competence may provide the foundation for the development of effective intervention programs to prevent later mental health problems or other negative outcomes, highlighting a purpose of the current study (Asher, 1990). Studies have found that children who are rejected by their peers and subsequently have a poor school experience are at a greater risk for poor school and social adjustment, premature dropout from school, delinquency, and "trouble with the law" (Kupersmidt, Coie, & Dodge, 1990, p. 287). It is important, then, to

identify maladaptive patterns early on, as they predict future life stressors and problems. Dodge and colleagues (2003) conducted a longitudinal study following children in first through third grades to the fifth through seventh grades; they found that being rejected by peers in early elementary school is associated with later antisocial behavior and that this social rejection plays an “incremental role” (p. 390) in the development of later aggression.

Models of Social Information Processing

Children confront many challenging social tasks in their everyday lives, and their ability to understand and interpret these situations influences their behavioral responding (Erdley & Asher, 1999). As the literature suggests, a child’s social competence is key to how he or she makes these interpretations (Welsh & Bierman, 1998). The past three decades have seen extensive research investigating how children process information from the social world and how this affects their social competence and social problem-solving strategies and, consequently, their behavior (Crick & Dodge, 1994).

Crick and Dodge’s (1994) six-step social information-processing (SIP) model offers a detailed view of how children process and interpret cues in social situations to arrive at a decision that is more or less socially competent. According to this model, it is assumed that children enter into a social situation with knowledge and memories of past experiences as well as a set of biologically determined capabilities that they may use in a given situation to determine subsequent reactions. They also assert that a child’s behavioral reaction to a social situation is a function of how they process the cues that they receive during the interaction.

The steps of Crick and Dodge's (1994) model include (a) encoding of external and internal cues, (b) interpretation and mental representation of those cues, (c) clarification or selection of a goal, (d) response access or construction, (e) response decision, and (f) behavioral enactment. Because even simple situations can involve multiple cues, SIP must complete, revise, and re-initiate problem-solving sequences, which often overlap in time and occur simultaneously. Dodge et al. (1986) state that SIP is an important part of general social functioning and describe the relationship between SIP and social behavior as being cyclical. According to the authors, the five major units of social interactions are as follows: (a) social cues conceptualized as a social situation by the child, (b) social information processing of those cues, (c) social behaviors by a child resulting from the processing of those cues, (d) judgments made by peers about the child's behavior, and (e) the peers' behavioral response towards the child, which causes more social cues to be processed, repeating the cycle.

Extensive research conducted applying Crick and Dodge's (1994) model of SIP has demonstrated the role that children's processing of the social environment plays in their social competence as confirmed through their social acceptance by peers, their behavior in social situations, and consequent adjustment. Studies have revealed that having initial problems and biases in SIP leads to social rejection in early elementary school. Subsequent rejection, then, changes the way socially rejected children process information during later interactions with peers by "increasing their hypervigilance to hostile cues and their tendency to generate aggressive responses to peer dilemmas and their skill enacting those responses" (Dodge et al., 2003, p. 390).

Lemerise and Arsenio (2000) accept the current model of social information-processing, but present a model that expands on that of Crick and Dodge (1994) by integrating the role of emotion. This integrated social-information processing model asserts children not only come into a situation with prior knowledge, memories, and biological abilities, but that they also bring their individual personal emotional style, or emotionality, as well as emotion regulation skills. A child's emotionality reflects the intensity with which he or she experiences feelings and emotions. Emotion regulation skills refer to a child's ability to control his or her affective arousal by identifying the emotions being felt, managing these feelings, and appropriately expressing them.

Because situations that are emotionally arousing are often tentative, emotion processes can play an adaptive or maladaptive role in these situations by decreasing the cognitive strain of processing this information so the child can come to a decision relatively quickly (Erdley & Asher, 1999). Children's ability to regulate emotions and subsequent behaviors in these situations is reflective of the cognitive processes involved in social competence, as Lemerise and Arsenio assert that having strong emotion regulation skills may act as a buffer against the development of poor social competence. These authors contend that strong social competence skills result when a child's emotional style is high or low in emotionality, as long as regulation skills are strong (Lemerise & Arsenio, 2000).

According to Crick and Dodge (1994), social information-processing begins when the child attends to, encodes, and interprets social cues. At the first step, according to Lemerise and Arsenio (2000), the child must figure out what it is that happened in the situation by directing attention to and encoding the relevant internal and external

situational and emotional cues from the other peers involved. The quality of the relationship and emotional ties with the peers, along with the child's current emotional state, directly affect how child responds in the situation.

Second, the child must figure out why the event happened by interpreting the cues just encoded. This step is often closely linked to the first, as they occur almost simultaneously. It is at this point that the child distinguishes the nature of the event and reacts based on this information along with his or her interpretation of the emotional information obtained from the peer. For example, if a disliked peer who has a hostile expression on his face pushes a child, the child must figure out by whom he was pushed and if it was accidental or purposeful. At this step, the "affective nature" of the relationship, whether or not the children are friends or view each other positively, is key (Lemerise & Arsenio, 2000, p. 112). In addition, the child's own felt emotions can influence this step.

During the third step, the child's goals for the outcome of the situation are clarified by his or her need and ability to regulate emotion effectively enough to maintain the current mood as well as the current relationship with the peer. Again, the affective nature of the relationship with the peer is crucial. These two factors determine the nature of the goal, whether it is passive, hostile, friendly, or assertive (Lemerise & Arsenio, 2000). To continue the previous example, the child would now decide if he or she will become angry or not in response to the push. If the child is already angry, then he or she would decide whether or not to show this anger. Past research by Lemerise, Harper, Caverly, and Hobgood (1998) has shown that for children who are poorly accepted and aggressive, being in a bad mood before the event happens increases the likelihood that

children will focus on an instrumental, or hostile goal, but when children are in a positive mood, positive goals that will help maintain the current mood will be chosen. For children who are highly accepted, however, less hostile goals are chosen regardless of mood. These results are indicative of emotion regulation skills being used by these more socially competent children.

In steps four and five, possible responses to the situation are generated and evaluated in terms of expected outcomes, relations to goals, and self-efficacy. These possible responses are influenced by past experiences the child has had, the affective nature of the relationship with the peer, the intensity of the emotion the situation provokes, and the individual ability of the child to regulate and control emotions. The type of event that has occurred may cue a particular emotional response. In the previous example, the child may recall the last time he or she was pushed by someone he or she didn't like and, as a result, become angry and react accordingly. Also, the child may experience emotions so intensely he or she is unable to regulate them and evaluate the situation properly. A child's own personal temperament may play a role in how responses are generated and evaluated (Lemerise & Arsenio, 2000).

The final step in Lemerise and Arsenio's (2000) integrated model of social information processing is response enactment. Again, the intensity of the emotion manifested by the child and the child's ability to regulate this emotion is crucial at this step. In continuance of the example, if the child is very angry about being pushed, he or she may be unable to follow through with the steps of the model and instead lashes out. The child also determines whether his or her response is successful by evaluating cues from the peer after the response has taken place.

Subsequent research has reinforced the role of emotion in SIP. According to Murphy and Eisenberg (2002), emotions “serve to energize, organize, and to regulate interpersonal behaviors such that they increase the likelihood of certain behavioral patterns occurring” (p. 536). The authors found that as the intensity of children’s anger increased, they tended to have behavioral responses that were less constructive. They also found that emotional processes can affect the goals that guide children’s responses to social situations. Results indicated that children who reported intense anger during a conflict situation also tended to report unfriendly goals. Previous research conducted by the authors revealed that boys viewed as emotionally intense, unregulated, and aggressive were more likely to respond with unfriendly responses when they were presented a peer who was angry with them (Murphy & Eisenberg, 1997).

Because, as Underwood (1997) points out, children who have difficulty in controlling emotions and behave aggressively are at risk for delinquency, it is important that children understand how to express emotion appropriately in social situations. Underwood found that children were able to make predictions of how a peer would react to a hypothetical situation depending on the emotion the peer was exhibiting (e.g., if the peer was angry, they may predict that the peer would react negatively to a given situation). Results also showed that children expected more positive peer reactions from peers exhibiting positive emotions and sadness and that they expect peers to mask strong emotion in a social interaction. Furthermore, the participants reported they would be most expressive of happiness and least expressive of anger. Similarly, research has shown that children were able to differentiate angry peers in a provoking situation from happy or sad peers, making more hostile attributions about peers who were angry

(Lemerise, Gregory, & Fredstrom, 2005). Further, the influence of peers' emotion on SIP also depends on the social adjustment and individual SIP style of the child, and the type of decision, with emotion adding meaning to the social interactions (Lemerise, Fredstrom, McCormick, Bowersox, & Waford, 2005).

Social Cognition and Social Goals

It is evident that children's processing of the social world is affected by numerous factors including biological processes, emotional processes, and cognitive mechanisms. Research has shown there is a physiological basis for the observed understanding of other's actions and emotions (Gallese, Keysers, & Giacomo, 2004). Insel and Fernald (2004) propose that although the brain controls a great deal of human social behavior, reciprocally, information in social interactions may also influence physiological functioning. Crick and Dodge (1994) assert that SIP is a form of "on-line" brain performance involving parallel neural networks that process information at the neural level, including feedback loops with a cyclical structure. Crick and Dodge note that this explains the simultaneous nature of SIP, how children can be engaged in multiple SIP activities at the same time (i.e., interpreting cues as they encode others).

As discussed previously, Crick and Dodge (1994) and Lemerise and Arsenio (2000) propose that SIP is affected by previous knowledge and experiences. These prior experiences and knowledge, along with the schemas and heuristics associated with them, are considered to constitute social knowledge structures, which influence each step of the SIP sequence (Crick & Dodge, 1994; Dodge & Rabiner, 2004; Fraser et al., 2000). Schemas are the "short-hand representations of multiple social cues" stored in long-term memory that children rely upon when encoding cues from the environment; they allow

multiple cues to be encoded as a single cue (Fraser et al., 2000, p. 5). Heuristics are a type of social knowledge that acts as a set of instructions used to automatically process social information to interpret situational or instructional cues (Fraser et al., 2000). Crick and Dodge (1994) point out that although the use of schemas and heuristics may make processing more efficient, their use may also lead to errors in goal selection and strategy enactment. Burks and colleagues (1999) claim that SIP can be “re-conceptualized as the product of a chronically accessed knowledge structure...that translates stored knowledge into current actions” (p. 222). Their research has shown that children who have hostile knowledge structures are more likely to process social information in a hostile manner.

During a conflict situation, SIP is directly influenced by the interpretations children make based on attributions of causality and intent. Attributions are the assumptions the child makes about the reasons why a social situation has occurred that allow him or her to make judgments about the motivation for an event. These attributions aid in the subsequent goal construction, response access, and response selection. Attributions of causality involve assessing who is to blame for an interaction. For example, subsequent goals and response strategies will be very different depending on whether a child blames him- or herself or a peer for the jar of water that has just been spilled on his or her painting. Attributions of intention involve assessing purpose or meaning behind an interaction. A considerable amount of research has been conducted on how the attributional biases children possess may affect their subsequent SIP (Crick & Dodge, 1994).

According to Dodge (1980), a cyclical relationship exists between attributions and aggressive behavior in that if a peer's intentions are unclear in a situation, an aggressive

child is likely to attribute hostile intentions to the peer if the outcome is negative. This negative outcome, in turn, confirms this child's negative view of his or her peers and makes the child more likely to interpret future interactions with the peer in a hostile way. The peer is then more likely to attribute negative intention to the child, making future interactions with the child more hostile, which may also make it more likely for the child to be socially rejected by his or her peers. Moreover, research has demonstrated that children who have a hostile attributional bias may also have a deficit in detecting the intentions of peers and do not, then, understand that their responses are inappropriate (Dodge & Coie, 1987).

Prior to Crick and Dodge's (1994) model of SIP, a goal clarification step was not included, which makes this step relatively under-researched. Murphy and Eisenberg (2002) defined the clarification of goals process as "choosing (automatically or reflectively) what it is they wish to accomplish" (p. 535). Crick and Dodge (1994) described goals as "arousal states that function as orientations toward producing particular outcomes" (p. 87). Research on children's social goals has revealed that the development of social competence depends not just on overt behavior, but also the kinds of goals children choose to pursue in social interactions and on their knowledge of problem-solving strategies.

Although children report a variety of goals when involved in a problematic hypothetical situation, their goals can be classified into specific categories determined by the nature of the goal. Instrumental, or hostile goals are unfriendly and involve harm to a peer or relationship, revenge, or self-interest. Prosocial goals are friendly and reflect the desire for a positive outcome in the relationship and a continuance of the relationship.

Avoidance goals express the desire to stay away from the peer involved in a conflict or wanting to avoid any kind of trouble (Murphy & Eisenberg, 2002). Crick and Dodge (1994) add that children bring particular goal orientations with them into social situations and continue to immediately revise and construct new goals in response to the situation they are encountering.

In a conflict situation, goals serve to motivate behavior through the generation, evaluation, and selection of strategies that produce the desired resolution of the conflict situation. Murphy and Eisenberg (2002) state that “goals provide a framework for processing the situation by directing attention and affecting interpretations, which subsequently impact strategy selection” (p. 535). A purpose of the current study was highlighted by Erdley and Asher (1999) who emphasized the importance of studying children’s social goals, indicating that further study in this area is necessary for the development of a more comprehensive understanding of social competence. Multiple studies have shown that children’s behavioral response strategies during provoking social situations are relatively consistent with their goal tendencies (Erdley & Asher, 1996; Lemerise, Fredstrom, et al., 2005; Murphy & Eisenberg, 2002; Renshaw & Asher, 1983).

Dodge and Price’s (1994) study revealed that behavioral competence in responding to provocation was significantly predicted from processing at each SIP step and that this behavior correlated with participants’ responding in a hypothetical situations. These findings indicate that not only do the steps of SIP predict patterns of behavior, but that children can demonstrate SIP styles characteristic of high or low social competence. As discussed earlier, research conducted by Burks et al. (1999) on the influence of hostile knowledge structures on SIP has shown that these structures may

contribute to the stability of aggressive behavior and externalizing problems by playing a role in the connection between aggressive behaviors exhibited early and later in life.

Evidence from these studies indicates that the patterns of children's SIP correspond to particular patterns of behavioral responding in ordinary and difficult social situations.

The importance of these findings lies in the information provided about the possible predictability in the way children respond to particular situations, which offers insight into how decisions reflecting competence are made.

Developmental and Gender Patterns

Research in the area of developmental patterns in SIP and social problem-solving, although limited, has revealed that, for the most part, as children get older they are able to generate more effective and prosocial goals and strategies for solving problems and they rely less on aggression (Mayeux & Cillessen, 2003). In their longitudinal study from kindergarten through second grade, Mayeux and Cillessen found evidence to support this general trend. The authors found that as participants aged, they were able to suggest more responses and effective solutions to ambiguous provocation. They also found that the use of requesting solutions (requesting a peer to play together, being allowed to play alone, or requesting a compromise) increased over time, while the use of avoidant solutions (starting to play what the peer wants, doing something entirely different with the peer, playing alone, or playing with someone else) actually decreased.

Dodge and Price's (1994) cross-sectional study of first-, second-, and third-grade boys and girls found that older children were more skilled in their processing than were younger children, being more relevant in their encoding of cues (hostile and nonhostile), and in the accurate interpretation of these cues. They also found that the older children

demonstrated greater skill in behavioral response enactment, choosing less aggressive responses. Lemerise, Gregory, et al. (2005) found similar patterns in their study of first-through fourth-grade children. They found that younger children were less accurate in recalling the details of the situation in the ambiguous provocation vignettes they were shown and also made less friendly social problem-solving responses relative to older children. In addition, Crick and Ladd (1990) found that older children viewed the use of compromise strategies more positively than did younger children. The findings from these studies suggest that as children get older, they become better at choosing more appropriate and less aggressive strategies to solve problems due to their more accurate encoding and interpretation of cues.

In their study of 8-, 10-, and 12-year-olds, Underwood, Hurley, Johanson, and Mosley (1999) found that when faced with a provoking social situation (being taunted after losing a game), results were similar to those of Dodge and Price's (1994) study. They found that while all age groups were able to maintain a high degree of composure, the older children maintained facial expressions that were more neutral, made fewer gestures, and were also more likely than younger children to remain silent when taunted. When the children did respond to provocation, older children made fewer negative comments than did the younger children.

There is conflicting evidence, however, on the course aggression takes as children develop. Feldman and Dodge (1987) found that, in a study of first, third, and fifth graders, older children were able to come up with more responses to conflict situations than younger participants. The participants at all grade levels knew which responses were effective, but the older children also tended to know which responses were not

effective. Despite knowing which problem-solving solutions were more effective, the older participants were more likely to attribute hostile intent in peer conflict situations and to rate aggressive responses as effective. McFayden-Ketchum, Bates, Dodge, and Pettit's (1996) findings support Feldman and Dodge's research, as they demonstrated that aggressive responding increased from kindergarten through third grade. Their findings also indicated that boys' relative to girls' aggressive behavioral responding increased more over time.

The divergent findings may provide additional information about the nature of aggression. For instance, in McFayden-Ketchum et al.'s (1996) study, the majority of children whose aggressive responding increased over time, were those who had previously been identified as highly-aggressive. Therefore, this evidence indicates the development of a pattern of aggressive responding for those already aggressive students who may actually have SIP deficits.

Furthermore, Feldman and Dodge's (1987) finding that older children performed more competently in all three hypothetical situations (being teased, being provoked ambiguously, and initiating peer group entry) than younger children is in line with the general findings of other researchers. Their finding that older children also make more hostile attributions of intent and rate aggressive responding as effective may be attributed to the sociometric status of their population. Their results show that the majority of the hostile interpretations and endorsement of aggressive responses were given by those students who were labeled as either neglected or rejected by classmates. In addition, boys generated a greater number of aggressive responses than did girls. This again goes back to the existence and influence of possible SIP deficits in these children that keep

them from developing the appropriate problem-solving skills needed for successful interaction.

Despite the conflicting findings about whether aggression increases or decreases with age, Mayeux and Cillessen (2003) assert that the results of vignette studies suggest that there is a developmental trend of increasing competence in social problem-solving as children age. Crick and Dodge (1994) purport that the improvements seen in problem-solving skills occur because of a developmental change in information processing.

As indicated by McFayden-Ketchum et al. (1996), gender differences in SIP, social goals, and social problem-solving strategies exist in addition to developmental differences. Research conducted by Underwood et al. (1999) and Crick and Grotpeter (1995) has demonstrated the existence of gender differences in the expression of anger and negativity. Underwood and colleagues found that in response to a provoking social situation, girls made fewer negative comments and gestures than did boys. Crick and Grotpeter found that boys' expression of anger, negativity, and aggression is merely more overt than girls. However, Murphy and Eisenberg (2002) found that boys and girls did not differ in the intensity of their emotions of anger or sadness during a social conflict.

Evidence has also supported the notion that girls are more friendly and positive in their goals and problem-solving strategies. Miller, Danaher, and Forbes (1986) found that girls tended to offer help and provide emotional support, as well as avoid the loss of each when confronted with social conflicts. According to the authors, this evidence supported their hypothesis that girls' strategies are more concerned with maintaining social harmony and social relationships. Results from Murphy and Eisenberg's (2002) study of boys and girls from 7 to 11 years of age concur in that they found girls to pursue

friendlier goals in hypothetical conflict situations and to also enact more constructive behavior than did boys.

Research, like that conducted by Haywood and Fletcher (2003), has indicated that there are differential patterns of aggression in goals and response enactment between boys and girls. Haywood and Fletcher found in their study of boys and girls from the third, fourth, ninth, and tenth grades that boys were more likely to interpret an ambiguous situation as aggressive than girls, providing evidence for their hypothesis that the hostile attributional bias may be more prevalent amongst males. Lemerise (1997) also reported that boys were more often nominated as aggressive by classmates than girls were. However, girls were reported to have more feelings of distress towards the ambiguous hypothetical situations. Further evidence has been found indicating that boys have greater rates of resolving conflict using aggressive strategies and engage in and pursue conflict more than girls (Miller et al., 1986).

Results of studies examining possible developmental and gender patterns in SIP, formulation of social goals, and social problem-solving have indeed identified relationships between them. Research indicates that, generally, children's social competence and the factors that affect social competence (SIP, social goals, and problem-solving) tend to become more complex and efficient with age. There is some conflicting evidence for patterns of aggression as children age, but Feldman and Dodge (1987) assert that, generally, more research indicates that aggression decreases with age. Boys may be an exception to this, however, with evidence indicating that boys' relative to girls' aggressive behavioral responding increased more over time (McFayden-Ketchum et al., 1996). As for patterns based on gender, past research has demonstrated that girls tend to

be friendlier and less hostile and aggressive than boys in their goals and problem-solving methods. Therefore, the research reviewed suggests that, in general, girls and older children are more positive and efficient in solving social problems, with boys possibly following a divergent pattern in aggression.

Purpose of Study and Hypotheses

For the most part, social information processing approaches to social competence and aggression have overlooked the roles of developmental change, gender, and emotion variables in children's social cognition and behavior. Moreover, compared to other social information processing steps, the goal selection step has been relatively understudied.

The purpose of this study was to examine how the patterns of development (age) and gender affect children's SIP, specifically, social problem-solving and social goal selection. Furthermore, it was a purpose of this study to examine the role emotion plays in these patterns. To accomplish this, hypothetical ambiguous provocation situations in which provocateurs' emotion displays (happy, angry, and sad) were systematically manipulated, were used in order to examine patterns of social information processing. The goal setting and social problem-solving of first-, third-, and fifth-grade children were examined in order to test hypotheses derived from Lemerise and Arsenio's (2000) integrated model of emotion and cognition in social information processing.

It was hypothesized that gender will affect children's problem-solving strategies and social goal selection. It was predicted that girls will choose more friendly and more prosocial goals and problem-solving strategies than will boys. It was also predicted that boys will choose more hostile social problem-solving strategies and social goals than will girls. Boys were expected to select aggressive problem-solving strategies more often

than girls. These hypotheses were made based on evidence in the reviewed literature that girls are generally friendlier in their responding to problematic social situations, on the general pattern that “girls devote more effort to establishing and maintaining positive social relations” (Siegler et al., 2003, p. 366), and that boys tend to be more aggressive and hostile (Feldman & Dodge, 1987; Haywood & Fletcher, 2003; Lemerise, 1997; Mayeux & Cillessen, 2003; McFayden-Ketchum et al., 1996; Miller et al., 1986; Murphy & Eisenberg, 2002). As there is not a sufficient literature on the role gender may play in selection of passive responses, this study was exploratory in nature and no specific hypotheses were made to address passive responding.

Age was also expected to affect children’s problem-solving strategies and social goal selection. It was hypothesized that older children will be more friendly and prosocial in their problem-solving and goal selection relative to younger children. Also it was predicted that hostile goals and strategies would be chosen less often by older children and more often by younger children. This hypothesis is based on research indicating that older children have access to a larger repertoire of past experience that guides them in selecting strategies that more are positive, making them more effective (Dodge & Price, 1994; Feldman & Dodge, 1987; Lemerise, Gregory, et al., 2005; Mayeux & Cillessen, 2003). As stated previously, no hypotheses were made regarding passive strategy use and the study of this type of responding was meant to be exploratory in nature.

Third, it was hypothesized that there will be an interaction of age and gender. Based on evidence from McFayden-Ketchum et al.’s (1996) study, it was expected that older boys will provide a greater number of aggressive responses and be more hostile in

their social goal selection. Along with evidence from Feldman and Dodge's (1987) study, McFayden-Ketchum and colleagues (1996) purport that aggression increases with age; however, their findings support that this finding is an exception to the general pattern of aggression decreasing with age, seen only in boys. Older girls are not expected to exhibit a greater number of aggressive responses.

Fourth, it was hypothesized that the provocateur's emotion displays would influence the relative importance assigned to different goals and the friendliness/hostility of children's problem-solving responses. It was predicted that when the provocateur in the vignette appears to be angry, children's responses would be less friendly and less prosocial, while hostile goals and strategies would be chosen more often than when the provocateur is happy or sad. Examining differences in this area is important because it may lead to a better understanding of how children of different ages and gender interpret and respond to different social situations. The responses children have in these situations may affect their social competence, which affects success in peer relationships.

CHAPTER 2

Method

Participants

Participants (N = 514) for the present study were drawn from five elementary schools representing two school districts and received parental consent to participate (81%). Children from the following grades participated: (a) 1st grade (93 boys, 79 girls); (b) 3rd grade (85 boys, 105 girls); and (c) 5th grade: (62 boys, 90 girls). The sample was 81% European-American, 14% African-American, and 5% other (Asian-American, Hispanic-American).

Procedure

Overview

An interviewer presented participants with videotaped hypothetical provocation stimuli in which provocateurs' emotion displays were systematically manipulated. Children's understanding of each stimulus situation was assessed. Then children rated the importance of six different social goals and responded to an open-ended question about how they would solve the problem for each stimulus situation.

Social Cognitive Interview

Over the course of at least one semester, experimenters were trained to conduct a social goals interview developed by Lemerise (2001). Individual interviews were conducted with children who had received parental consent. Children were taken from class by an unfamiliar experimenter and escorted to an empty room where the experimenter reminded the children of parental consent and briefly explained the procedures and types of questions the experimenter would be asking. From that point,

verbal assent from children younger than eight years and written assent from children older than eight years was obtained.

Participants viewed, one at a time, seven video-taped ambiguous provocation situations (one practice story, six stimulus stories, mean story duration = 16.4 sec). Provocateurs' emotion displays were systematically varied across stimulus stories (two each of happy, angry, and sad), and the order of the emotion displays was counterbalanced across three versions of the stimuli; participants were randomly assigned to each version. Participants viewed pairs of same-gender, same-race children in each videotaped situation; gender and race (Caucasian and African-American) of the stimulus children varied across stories. For each stimulus situation, the provocateur's emotion display began at the beginning of the video segment (Lemerise, Gregory, et. al., 2005). The emotion display lasted throughout the story and was expressed in vocal tone, body language, and facial expression (e.g., anger was depicted with a harsh vocal tone, tense body language, and angry facial cues that included a knit brow and frown).

For example, one vignette depicted two girls sitting together playing with play-dough. Child A (the provocateur) picks up her play-dough basket, shows it to Child B, and asks "How do you like my basket?" Child B responds "It needs more eggs." Child A then puts the basket back on the table and reaches for more play-dough in the center of the table. While reaching, her arm presses down onto Child B's play-dough bunny, smashing its ears and head. It is not clear whether Child A intended the outcome since she was not looking at her arm or the play-dough when she was reaching for the play-dough and smashed the bunny; in other words, she appeared to be careless and clumsy. Across three versions of this vignette, Child A's (the provocateur's) emotion display was

varied (happy, angry, and sad); all other features were identical across stories. In stories where the provocateur caused some kind of damage, the child appeared to be clumsy or not paying attention to where he or she was going/reaching (4 stories). In the other two stories, the provocateur picked up something that the other child put down, and it wasn't clear that the provocateur knew the other child was still playing with it. Finally in one story, a child was throwing a ball against a wall and when the provocateur asked what the child was doing, the child said he was playing ball. Then, after the child threw the ball, the provocateur caught the ball as it bounced off the wall.

Participants were instructed that they would view stories presented on video-tape and be asked questions about them. Each participant was asked to imagine he or she was a child in the story identified by a red numbered shirt. This character (always the victim of the provocation) was pointed out for each story. The practice story was used to familiarize children with the task; responses to the practice story were not analyzed. Before starting each story, the experimenter reminded the child to pay attention so he or she could answer questions about the story. When each videotaped vignette was over, the experimenter paused the videotape and asked a standard set of questions for each story. After each vignette, the interviewer first assessed the participants' comprehension by asking participants to tell the interviewer what happened in the story. Here the intent was to ensure that all participants noticed the provocation. If the child could not correctly recall the provocation in the vignette, the experimenter briefly described the provocation in neutral terms (e.g., "the bunny's ears and head got smashed"), reshown the vignette, and checked for comprehension again before proceeding.

Then, the experimenter assessed the importance of six different social goals by asking the participant to rate them on a five-point importance scale (see Appendix A). The experimenter then explained the rating scale used in the procedure. This scale was a five-point measure of importance, ranging from 1, being the least or “not at all important” to 3, being “important” and to 5, being the “most important of all.” The experimenter then conducted a check for comprehension of the scale and either proceeded with the interview or explained the scale again before proceeding. The goals assessed included two of each of three social goal types: prosocial, hostile, and avoidant, whose order was counterbalanced across vignettes. Prosocial goals included “take care of the problem” and “get along and be friends with the other kid.” Hostile goals included “get your own way/look strong” and “get back at the other kid.” Avoidant goals included “stay away from any kind of trouble or problem” and “stay away from other kid.”

For each vignette, the most important goal was obtained by identifying which goal the child rated the highest on the rating scale. If the child scored more than one goal as highest, then those goals rated as a five were reviewed and the child was asked to pick which was the “most important of all.” The final question addressed participants’ social problem-solving by asking what they would say or do if the situation presented in the vignette actually happened to them. The experimenter recorded the child’s response verbatim (see Appendix B).

Social Cognitive Interview Coding Procedure

The question assessing participants’ social problem-solving, asked “What would you say or do if this really happened to you?” Over the course of approximately one semester, selected experimenters were trained to code children’s responses based upon

the coding schemes developed by Lemerise (2001) and Murphy and Eisenberg (1997). Twenty percent of the interviews were randomly selected and scored by a second coder to obtain inter-rater reliabilities; the original coders did not know which interviews were being used for reliability. Content category codes (inter-rater reliabilities (kappas) are shown in parentheses) were as follows: (a) verbal aggression, (b) physical aggression, (c) passive responses, (d) avoidance responses, (e) problem-focused coping responses, (f) person-focused coping responses, (g) authority – fix, (h) authority – punish, (i) other, (j) or no response (.92; Lemerise, 2001).

The number of verbally aggressive and physically aggressive responses were summed. Responses were also scored according Murphy and Eisenberg's (1997) coding scheme on two dimensions: hostility/friendliness and passivity/assertiveness (see below).

Hostility/friendliness of problem-solving responses. Problem-solving responses were rated on a 5-point scale of hostility/friendliness: 1 = hostile/unfriendly, highly likely to result in cessation of play and a negative outcome for the peer relationship; 3 = neutral; 5 = highly friendly, highly likely to result in continuation of play and a positive outcome for the peer relationship (.87; Murphy & Eisenberg, 1997).

Passivity/assertiveness of problem-solving responses. Problem-solving responses were rated on a 5-point passivity/assertiveness scale: 1 = passive, does nothing about the provocation and would yield to the peer; 3 = not clearly assertive or passive; 5 = assertive, active and dominant, denoting an assertion of one's rights (.80; Murphy & Eisenberg, 1997). Note it is possible for a response to be both assertive and friendly (e.g., "Help me pick this up so we can keep playing."), as well as assertive and very unfriendly (e.g., "If you don't pick up that stuff, I'll hit you.").

$p < .05$. Children also rated how important it was to “still be friends” with the provocateur; for this goal, a main effect of emotion display was found, $F(2, 1016) = 13.04, p < .0001$. Analyses showed that remaining friends was rated more positively when the provocateur was either happy or sad than when he or she was angry, $ps < .01$. Across emotion for this goal, there also were significant effects of gender, $F(1, 508) = 11.62, p = .001$, and grade, $F(2, 508) = 8.62, p < .0001$. Girls rated this goal significantly more positively than did boys. Also, first graders rated this goal significantly more positively than did third and fifth graders, $ps < .05$.

Hostile/Instrumental Goals

For the, “get own way, look strong” goal, there were main effects of both gender, $F(1, 508) = 6.82, p < .01$, and grade level, $F(1, 508) = 8.63, p < .001$. Boys rated “getting your own way/looking strong” significantly more positively than did girls. First graders also rated this goal more positively than did third or fifth graders, $ps < .05$.

For the revenge goal, “get back at the other kid,” a main effect of emotion display, $F(2, 1016) = 5.34, p < .01$ was modified by an interaction of emotion display and grade level, $F(4, 1016) = 3.99, p = .003$. Post hoc tests for the main effect did not reveal significant differences. Simple effect analyses examined the effect of provocateur emotion display for each grade level; significant effects were found for third and fifth graders, $F_s(2, 190) \geq 9.65, ps < .01$, and are illustrated in Figure 1. When the provocateur was angry, revenge was rated more positively by third and fifth graders, than when the provocateur was either happy or sad, $ps < .01$. There were no significant differences across provocateur emotion display for first graders.

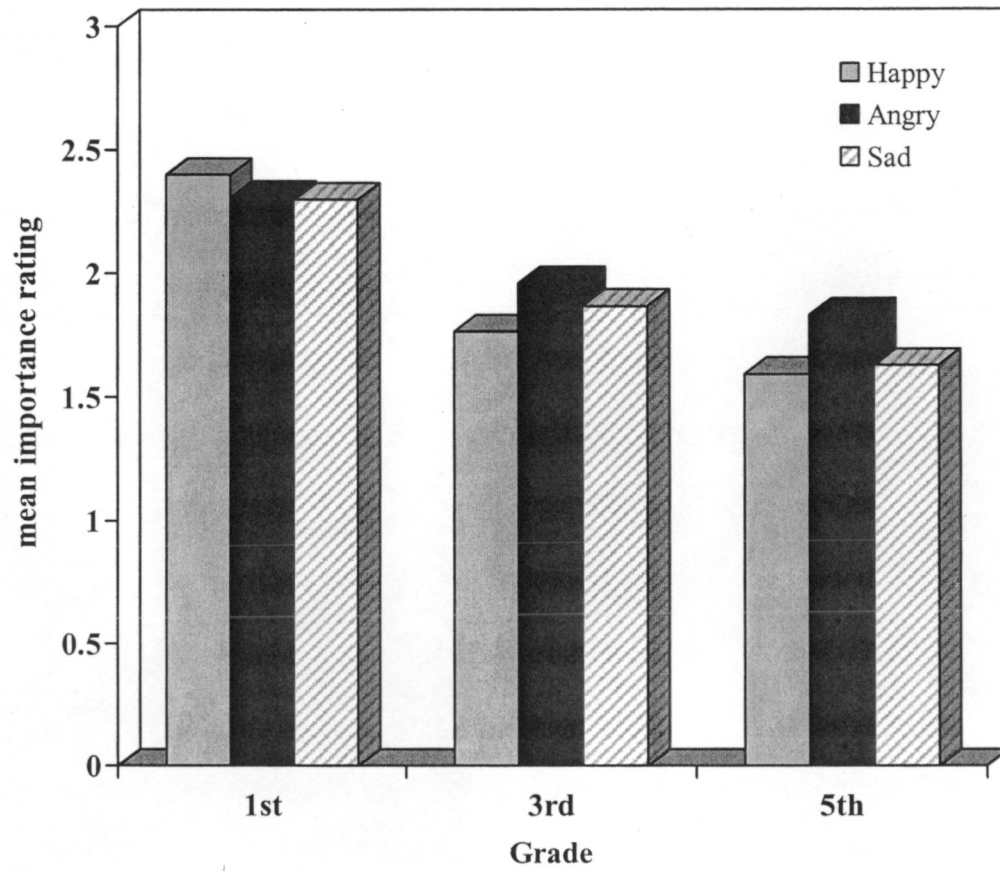


Figure 1. Interaction between emotion display and grade level for the revenge goal.

Also, for the revenge goal, a main effect of gender, $F(1, 508) = 4.10, p < .05$, was found. Boys had significantly more positive ratings of the revenge goal than girls. A main effect of grade level, $F(2, 508) = 17.51, p < .001$, was also found. First graders rated this goal more positively than did third and fifth graders, $ps < .05$. This main effect was modified by an interaction of gender and grade level, $F(2, 508) = 3.33, p = .037$. Simple effects analyses of the grade by gender interaction, $F(2, 274) = 6.10, p < .01$, demonstrated that first grade girls rated the revenge goal significantly more positively than did fifth grade girls, $p < .01$, as presented in Figure 2. There were no significant grade differences for boys in ratings of the revenge goal.

Passive/Avoidant Goals

A main effect of emotion display, $F(2, 1016) = 8.55, p = .001$ was found for the passive goal, “stay away” from the provocateur. This goal was rated more positively when the provocateur was angry than when the provocateur was either happy or sad, $ps < .01$. A main effect of grade, $F(2, 508) = 6.87, p < .001$, was also found. First and third graders both rated this goal more positively than did fifth graders, $ps < .05$. No significant effects were found for the “avoid trouble” goal.

Goals Rated As Most Important

The effect of developmental level on children’s goal selection was examined by a set of three goal by grade level chi-square analyses, one for each level of provocateur emotion display. Z-tests were completed to identify significant cells. Significant results were found for each level of provocateur emotion display: happy, $\chi^2(10, N = 1028) =$



Figure 2. Interaction between gender and grade level for the revenge goal.

30.13, $p < .01$; sad, $\chi^2 = (10, N = 1028) = 43.39, p < .01$; and angry, $\chi^2 = (10, N = 1028) = 24.49, p < .01$. Results are presented in Tables 1 through 3 respectively.

For happy provocateurs, first graders rated avoiding trouble as most important less often than expected, $z = -2.37, p < .05$, and avoiding the provocateur as most important more often than expected, $z = 2.03, p < .05$. Fifth graders rated getting their own way and avoiding the provocateur as most important less often than expected, $z_s \leq 4.33, p_s \leq .001$. Third graders did not rate any goal as most important more or less often than expected.

For sad provocateurs, first graders rated getting their own way as most important more often than expected, $z = -2.80, p < .01$, and avoiding the provocateur as most important less often than expected, $z = 2.91, p < .01$. Fifth graders, however, rated getting their own way as most important less often than expected, $z = 7.80, p < .001$, and avoiding trouble as most important more often than expected, $z = -2.79, p < .01$. Third graders did not rate any goal as most important more or less often than expected.

For angry provocateurs, first graders rated avoiding trouble as most important less often than expected, $z = 2.57, p < .05$. Fifth graders rated avoiding trouble as most important more often than expected, $z = -2.21, p < .05$; however they rated avoiding the provocateur as most important less often than expected, $z = 2.54, p < .05$. Third graders did not rate any goal as most important more or less often than expected.

Overall, across emotion display, first graders rated the avoiding trouble goal as most important less often than expected. Fifth graders, however, rated this goal as most important more often than expected when the provocateur was sad or angry, but not when

Table 1

Goal Type by Grade Chi Square for Happy Provocateurs

| Most Important Goal | Grade 1 Observed | Grade 3 Observed | Grade 5 Observed | Expected |
|----------------------------|---------------------|---------------------|---------------------|----------|
| Get own way | .064 | .037 | .020** | .041 |
| Get back at provocateur | .035 | .029 | .023 | .029 |
| Avoid trouble | .253* | .318 | .359 | .308 |
| Avoid provocateur | .099* | .068 | .026*** | .066 |
| Take care of problem | .218 | .255 | .234 | .236 |
| Be friends | .331 | .292 | .339 | .319 |

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed.

Table 2

Goal Type by Grade Chi Square for Sad Provocateurs

| Most Important Goal | Grade 1 Observed | Grade 3 Observed | Grade 5 Observed | Expected |
|----------------------------|---------------------|---------------------|---------------------|----------|
| Get own way | .087** | .039 | .007*** | .046 |
| Get back at provocateur | .047 | .024 | .033 | .034 |
| Avoid trouble | .227** | .292 | .372 ** | .294 |
| Avoid provocateur | .058 | .068 | .039 | .056 |
| Take care of problem | .253 | .276 | .217 | .251 |
| Be friends | .328 | .300 | .332 | .319 |

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed.

Table 3

Goal Type by Grade Chi Square for Angry Provocateurs

| Most Important Goal | Grade 1 Observed | Grade 3 Observed | Grade 5 Observed | Expected |
|----------------------------|---------------------|---------------------|---------------------|----------|
| Get own way | .047 | .026 | .023 | .032 |
| Get back at provocateur | .049 | .039 | .039 | .043 |
| Avoid trouble | .224* | .305 | .365* | .303 |
| Avoid provocateur | .110 | .097 | .056* | .089 |
| Take care of problem | .218 | .279 | .247 | .249 |
| Be friends | .331 | .253 | .270 | .284 |

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. *** $p < .001$, two-tailed.

the provocateur was happy. In addition, it was more important to first graders and less important to fifth graders than expected to get their own way when the provocateur was sad. Also, for all emotion displays, there were no significant effects for third graders.

In addition to developmental level, the effect of gender on children's goal selection was examined by a set of nine gender by goal type chi-square analyses, one for each grade level and level of provocateur emotion display. Z-tests were completed to identify significant cells. Third grade by gender chi-square analyses across all emotion displays were not significant and are not discussed further.

Chi-square analyses for first grade by gender were significant for the angry emotion display: $\chi^2 = (5, N = 344) = 11.95, p < .05$. When the provocateur was angry, first grade boys rated avoiding trouble as most important more often than expected, $z = -2.00, p < .05$. First grade by gender chi-square analyses for happy and sad provocateur emotion displays were not significant.

Chi-square analyses for fifth grade by gender were significant across emotion displays: (a) happy, $\chi^2 = (5, N = 304) = 15.98, p < .05$; (b) sad, $\chi^2 = (5, N = 304) = 16.11, p < .01$; and (c) angry, $\chi^2 = (5, N = 304) = 19.60, p < .01$. When the provocateur was happy, fifth grade girls rated getting their own way as most important less often than expected, $z = 2.17, p < .05$. When the provocateur was sad, fifth grade girls rated getting back at the provocateur as most important less often than expected, $z = 4.66, p < .001$, whereas fifth grade boys rated avoiding the provocateur as most important less often than expected, $z = 2.09, p < .05$, as presented in Table 4. When the provocateur was angry, fifth grade boys rated getting back at the provocateur as most important more often than expected, $z = -2.15, p < .05$.

Table 4

Goal Type by Gender Chi Square for Fifth Grade: Sad Provocateurs

| Most Important Goal | Boys Observed | Girls Observed | Expected |
|-------------------------|------------------|-------------------|----------|
| Get own way | .016 | 0 | .007 |
| Get back at provocateur | .073 | .006*** | .033 |
| Avoid trouble | .371 | .372 | .372 |
| Avoid provocateur | .016* | .056 | .039 |
| Take care of problem | .202 | .228 | .217 |
| Be friends | .323 | .339 | .332 |

** $p < .05$, two-tailed. * $p < .01$, two-tailed. *** $p < .001$, two-tailed.

Children's Problem-solving Responses

Problem-solving responses were coded for hostility/friendliness and passivity/assertiveness, and the number of aggressive responses were examined. These variables were not found to be correlated with one another, so, separate 3 (emotion display) x 3 (grade) x 2 (gender) mixed design ANOVAs where gender and grade were between-subjects variables and emotion display was a within-subjects variable were conducted for each of the three dependent variables (hostility/friendliness, passivity/assertiveness, and number of aggressive responses). For main effects, Tukey HSD post hoc tests were used to follow-up and identify significant effects. However, for interactions, tests of simple effects were conducted and followed-up with Tukey HSD post hoc tests.

For the number of aggressive problem-solving responses, a main effect of emotion display, $F(2, 1016) = 3.59, p = .028$ was modified by a significant interaction with gender, $F(2, 1016) = 3.38, p = .04$. Post hoc tests for the main effect did not reveal significant differences. The interaction of provocateur's emotion display and gender for aggressive problem-solving responses is presented in Figure 3. Simple effect analyses of the interaction between emotion display and gender, $F_s(2, 240) \leq 7.51, p_s < .01$, showed that boys were significantly more aggressive in their problem-solving strategies than girls for all levels of provocateur emotion displays. Also, boys had more aggressive problem-solving strategies when the provocateur was sad than when he or she was happy or angry, $p_s < .01$.

A main effect of gender, $F(1, 508) = 21.01, p < .001$ was also found. Boys had more aggressive problem-solving responses than girls. This main effect was modified by an interaction between gender and grade, $F(2, 508) = 5.05, p < .01$. According to simple

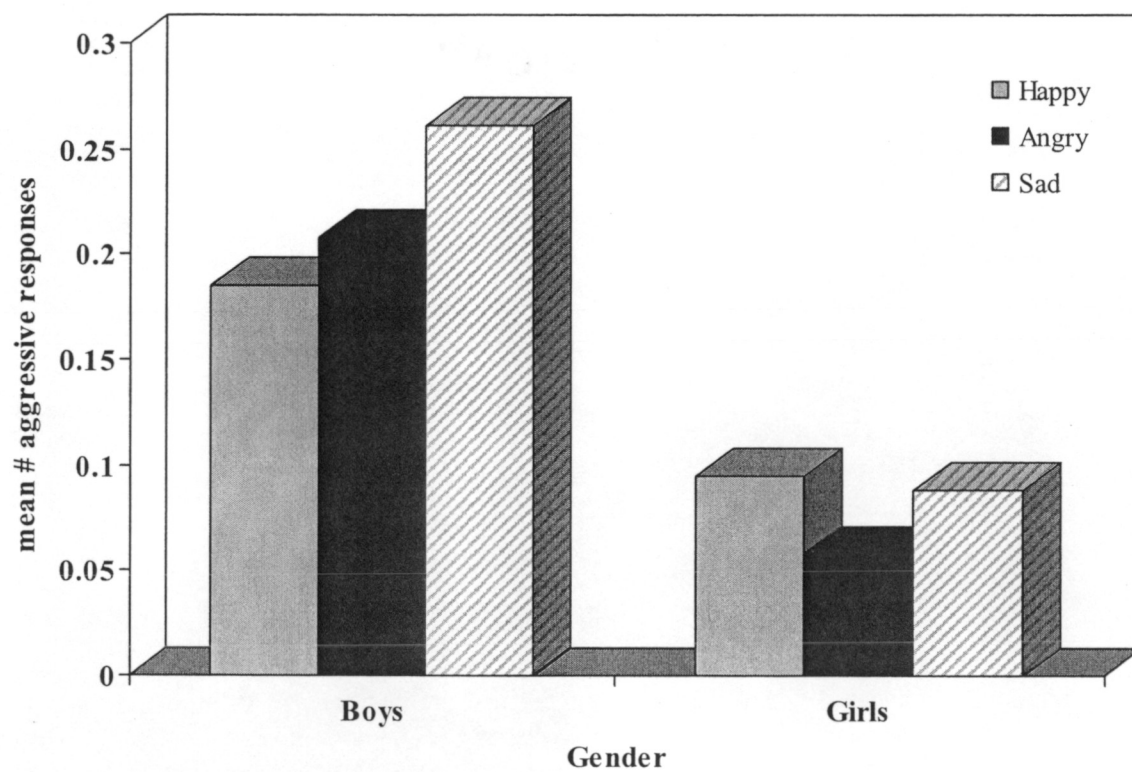


Figure 3. Interaction between emotion display and gender for the mean number of aggressive responses for boys and girls across emotion display.

effect analyses of the gender by grade interaction, $F(2, 240) = 8.19, p < .01$, fifth grade boys had significantly more aggressive problem-solving responses than both first and third grade boys, $ps < .01$, as presented in Figure 4. There were no significant grade differences in the number of aggressive problem-solving responses for girls.

For the friendliness/hostility of the problem-solving responses, a main effect of gender, $F(1, 508) = 13.31, p < .001$ was found. Girls' problem-solving responses were found to be friendlier than boys'. The main effect was modified by an interaction of gender and grade, $F(2, 508) = 3.56, p = .03$. The results of simple effect analyses for the gender by grade interaction are presented in Figure 5. Simple effect analyses showed a significant effect of grade for girls, $F(2, 274) = 7.88, p < .01$. Fifth grade girls had problem-solving responses that were friendlier than those of both first and third grade girls, $ps < .01$. Simple effects analysis did not reveal significant effects of grade level for boys.

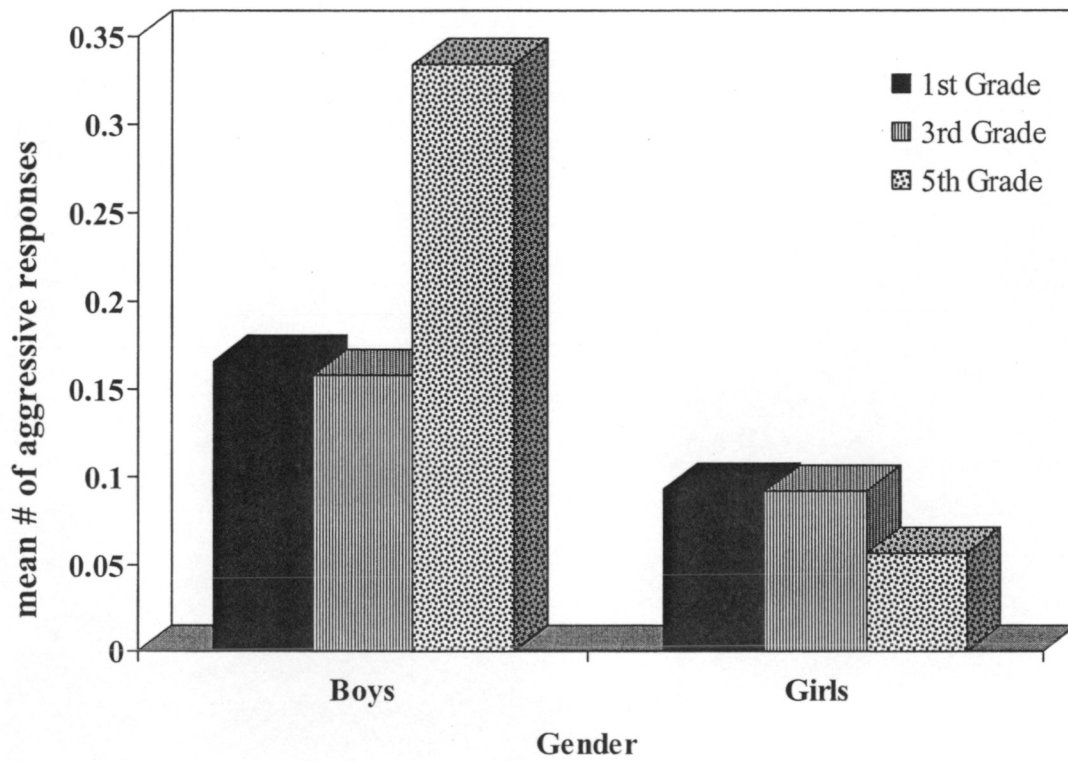


Figure 4. Interaction between grade and gender for the mean number of aggressive responses boys and girls had across grade.

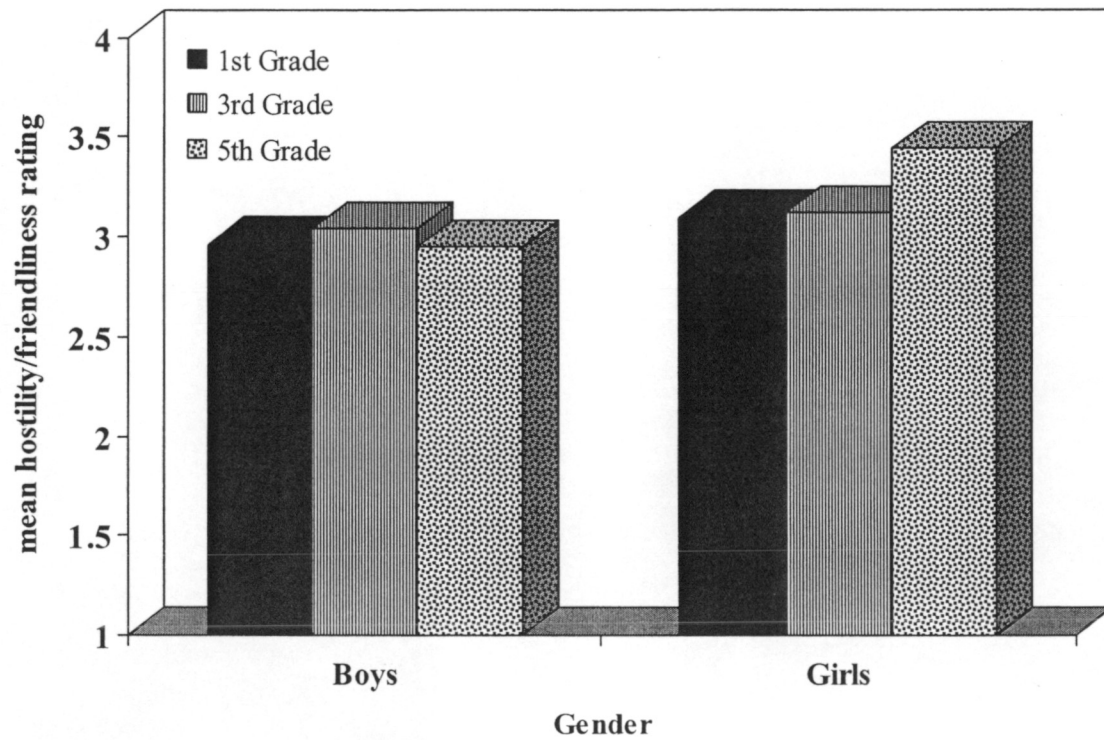


Figure 5. Interaction of the grade and gender for the mean hostility/friendliness of children's problem-solving responses.

CHAPTER 4

Discussion

The goal of this study was to examine the influence of developmental level and gender on children's social problem-solving and social goal selection, as well as the role emotion plays in these patterns. It was hypothesized that gender would affect goal selection and social problem-solving. Specifically, it was predicted that girls would choose friendlier and more prosocial goals and problem-solving strategies than boys. These hypotheses were supported by the current findings that the prosocial goal of remaining friends with the provocateur was rated more positively by girls than it was by boys. Furthermore, girls' problem-solving responses were found to be friendlier than those of boys'. In addition, it was predicted that boys would choose more hostile social problem-solving strategies and social goals than girls. This hypothesis was supported by results that boys rated hostile goals, such as getting their own way and revenge more positively and had a greater number of aggressive problem-solving responses than did girls.

These findings also are consistent with literature on the differential patterns in problem-solving strategies and goal selection in girls and boys (Crick & Grotpeter, 1995; McFayden-Ketchum et al., 1996; Miller et al., 1986; Underwood et al., 1999). The current study, like that of Murphy and Eisenberg (2002), found that girls tended to pursue friendlier goals in hypothetical conflict situations than did boys. These findings support evidence that "girls devote more effort to establishing and maintaining positive social relations" (Siegler et al., 2003, p. 366) than do boys. In addition, the findings support research indicating that boys are more likely to interpret an ambiguous situation as

aggressive than are girls (Haywood & Fletcher, 2003). The current findings highlight how social information can be processed differently, depending on one's gender.

It also was hypothesized that age, as conceptualized in this study as children's grade level, would effect social problem-solving and goal selection. Specifically, it was predicted that hostile goals and strategies would be chosen less often by older children and more often with younger children. This study found that generally, younger children rated both hostile goals, getting their own way and the revenge goal, more positively than did older children. When asked to report their most important goal, younger children more often selected getting their own way as being most important than did older children. Older children selected this goal as their most important goal less often than expected. As for passive goals, for which no specific hypotheses were made, older children did select the passive goal, avoiding trouble, as their most important goal more often than younger children, indicating its importance in problematic situations.

The current findings support other research that older children chose less aggressive and more appropriate strategies (Crick & Ladd, 1990; Dodge & Price, 1994). These authors also offer a possible account for the current findings, explaining that older children are more skilled in their encoding of cues (hostile and nonhostile) and the interpretation of these cues. This would concur with basic tenets of development, which argue that processing becomes more sophisticated with age.

It was also hypothesized that older children would be more friendly and prosocial in their social problem-solving and goal selection relative to younger children. The current findings only partially supported this hypothesis. Older girls were found to be friendlier in their problem-solving strategies than were younger girls; however, there

were no developmental differences for boys. This differential pattern in problem-solving is discussed below.

It was hypothesized that there would be an interaction of age and gender, based on previous findings, that the number of aggressive problem-solving responses would be greater for older boys than younger boys, but that this pattern would not exist for girls (Feldman & Dodge, 1987; McFayden-Ketchum et al., 1996). The current study found fifth-grade boys had significantly more aggressive problem-solving responses than either third- or first-grade boys. This finding lends support to those of Feldman and Dodge (1987) and McFayden-Ketchum and colleagues (1996) as well as researchers who feel that such findings provide evidence that the hostile attributional bias may be more prevalent amongst males (Haywood & Fletcher 2003). This also may indicate that these aggressive children may actually have SIP deficits as also suggested by McFayden-Ketchum and colleagues (1996).

The problem-solving responses fifth grade girls, however, were friendlier than those of both third- and first-grade girls. The finding that first-grade girls actually rated revenge more positively than fifth-grade girls also supports previous developmental findings that hostile responding is more positively rated by younger children. There were no developmental differences for boys on the friendliness of their problem-solving. These findings were consistent with the hypothesis that older boys would show the greatest number of aggressive problem-solving responses. Although it was not hypothesized that older girls would show friendlier problem-solving than younger girls, this interaction between age and gender demonstrates the differential influence that these variables have on the processing of children's social environment. These findings may

also lend support to the research arguing that girls' strategies are more concerned with maintaining social harmony and that girls tend to be more constructive in conflict situations (Miller et al., 1986; Murphy & Eisenburg, 2002).

Finally, it was hypothesized, that the provocateur's emotion displays would influence the relative importance assigned to different goals. Specifically, it was predicted that when the provocateur in the vignette appeared to be angry, children's responses would be less friendly and less prosocial, and that hostile goals and strategies would be chosen more often than when the provocateur was happy or sad. Prosocial goals were rated more positively when the provocateur was happy or sad than when the provocateur was angry. However, when the provocateur was angry, revenge and staying away from the provocateur were rated more positively. In general, when the provocateur was happy or sad, older children selected hostile goals less often as their most important goal; however, for angry provocateurs revenge was rated more positively by third and fifth graders.

These findings demonstrate that children are more concerned about preserving the relationship with peers who are not angry, which explains why for provocateurs who were happy, prosocial goals were rated more highly, allowing the child the opportunity to continue the play, hence preserving the social relationship. Also, avoiding the angry provocateur allows the opportunity to avoid any type of conflict, so selection of these goals involves the ability of the child to regulate and control his or her emotional response. Emotion regulation has been argued to enable children to choose more socially competent goals (Lemerise & Arsenio, 2000). In addition, the selection of hostile goals less often by older children when the provocation was happy or sad indicates that

appropriate understanding and interpretation of emotional cues increases with age (Dodge & Price, 1994).

These findings support Lemerise and Arsenio's (2000) integrated model of emotion and cognition in SIP. The current findings may lead to a better understanding of how children of differing developmental levels and gender respond to emotional cues in social situations. The results indicate that children respond to emotional cues in their social environment and support past findings that children are able to differentiate between angry, happy, and sad provocateurs, making more hostile attributions about peers who were angry (Underwood, 1997).

Implications

The results of the current study indicate that both similarities and differences exist in the goals boys and girls choose when presented with challenging situations. This information may be used by professionals working with children to possibly enhance their social competence and success in peer relationships in a school environment.

It is important to understand how children interpret the actions of their peers. Correctly recognizing the emotions of others helps children understand their peers' intentions and respond appropriately. Evidence from the current study shows that children do take a provocateur's emotion displays (whether happy, sad, or angry) into account when formulating social goals and deciding what kind of problem-solving strategies to use. This could be important when deciding which social skills curricula to use with children experiencing difficulty resolving conflict.

Currently, the curricula taking an SIP perspective are limited. Fraser and colleagues (2000), however, have designed a curriculum that uses SIP to teach students to

make better social problem-solving choices. By understanding how social information is processed differently by children depending on gender and age, programs such as this one could make an impact in schools by possibly increasing social competence and decreasing incidences of conflict. The results also suggest that it would be valuable for social skills curricula to help children understand how to recognize and express emotion appropriately as the results, in addition to the previous literature suggest that emotional expressivity in addition to behavioral expression are important in typical, as well as challenging social situations.

Evidence from the current study supports the need for anti-aggression or bully prevention programs in the schools. As the current study discussed, the problem-solving strategies used by fifth-grade boys are more likely to be aggressive. This could implicate that intervention would be useful with this population or, if implemented earlier, used as a preventative tool to help children solve problems and process social information through less aggressive, hostile means.

Limitations

The design of the current study used hypothetical vignettes to be presented to children in which provocateurs' emotion displays were manipulated. Although this design provided the opportunity to study how children respond in these types of situations, the goals they selected, and the problem-solving strategies they employed, the hypothetical nature of the stimuli may be a limitation to this study.

Children respond when asked, "What would you do if this really happened to you?" one way in the research situation, but may react another way in an actual "real-life" situation. The context in which the vignette is viewed is neutral and in the presence

of an adult experimenter, so this may bias the child's response to some degree. This did not seem to bias children's responses to any significant degree as patterns of aggression were established amongst specific populations; however, the point is that children may enact differing responses in a naturalistic setting and this could be a focus of future research.

In addition, within the structure of the research design, goals were presented to children who were then asked to rate their importance in the particular situation. Future research may consider asking children their particular goals in a situation instead of presenting them with specific choices. The presentation of predetermined goal choices may limit the options that the child has when making goal choices, as it may be a possibility that children consider additional goals as being of greater importance.

Finally, the current study was designed to examine developmental and gender patterns in SIP, social problem-solving, and social goals by employing a cross-sectional method. Other studies, such as Mayeux and Cillessen (2003) have explored such differences through longitudinal designs, but have not included all of the components of this study. Therefore, there is a lack of longitudinal data in this area and future research could be completed to examine whether these patterns are continued to be exhibited by these groups over time.

References

- Anderson, S., & Messick, S. (1974). Social competency in children. *Developmental Psychology*, 10(2), 282-293.
- Asher, S. R. (1990). Recent advances in the study of peer rejection. In S. R. Asher, & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 3-16). New York: Cambridge University Press.
- Burks, V. S., Laird, R. D., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1999). Knowledge structures, social information processing, and children's aggressive behavior. *Social Development*, 8(2), 220-236.
- Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Peer group behavior and social status. In S. R. Asher, & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 17-59). New York: Cambridge University Press.
- Crick, N. R., & Dodge, K.A. (1994) A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74 – 111.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, 66, 710-722.
- Crick, N. R., & Ladd, G.W. (1990). Children's perceptions of the outcomes of social strategies: Do the ends justify being mean? *Developmental Psychology*, 26(4), 612-621.
- Dodge, K. A., (1980). Social cognition and children's aggressive behavior. *Child Development*, 51, 162-170.

- Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, 53(6), 1146-1158.
- Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., & Price, J. M. (2003). Peer rejection and social information-processing factors in the development of aggressive behavior problems in children. *Child Development*, 74(2) 374-394.
- Dodge, K. A., Pettit, G. S., McClaskey, C. L., & Brown, M. M. (1986). Social competence in children. *Mongraphs of the Society for Research in Child Development*, 51(2, Serial No. 213).
- Dodge, K. A., & Price, J. M. (1994). On the relation between social information processing and social competent behavior in early school-aged children. *Child Development*, 65, 1385-1397.
- Dodge, K. A., & Rabiner, D. L. (2004). Returning to roots: on social information processing and moral development. *Child Development*, 75(4), 1003-1009.
- Dubow, E. F., Tisak, J., Causey, D., Hryshko, A., & Reid, G. (1991). A two-year longitudinal study of stressful life events, social support, and social problem-solving skills: Contributions to children's behavioral and academic adjustment. *Child Development*, 62, 583-599.
- Erdley, C. A., & Asher, S. R. (1996). Children's social goals and self-efficacy perceptions as influences on their responses to ambiguous provocation. *Child Development*, 67(4), 1329-1344.

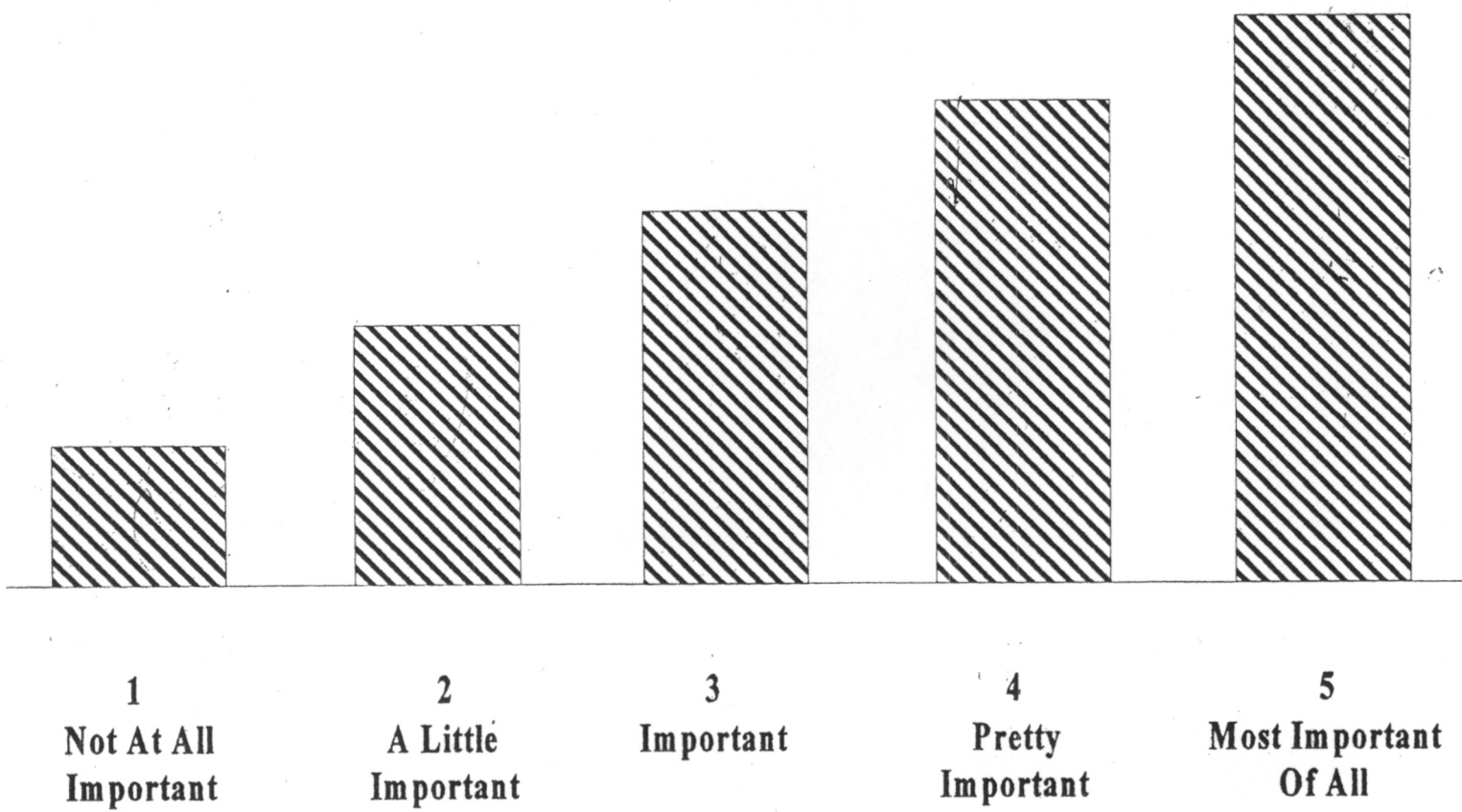
- Erdley, C., & Asher, S. (1999). A social goals perspective on children's social competence. *Journal of Emotional & Behavioral Disorders*, 7(3), 156 – 168.
- Feldman, E., & Dodge, K.A. (1987). Social information processing and sociometric status: sex, age, and situational effects. *Journal of Abnormal Child Psychology*, 15(2), 211-227.
- Fraser, M. W., Nash, J. K., Galinsky, M. J., & Darwin, K. M. (2000). *Making choices: Social problem-solving skills for children*. Washington, D. C.: NASW Press.
- Gallese, V., Keysers, C., & Giacomo, R. (2004). A unifying view of the basis of social cognition. *Trends in Cognitive Sciences*, 8(9), 396-403.
- Hayward, S. M. & Fletcher, J. (2003). Relational aggression in an Australian sample: Gender and age differences. *Australian Journal of Psychology*, 55(3), 129-134.
- Hubbard, J. A., & Coie, J. D. (1994). Emotional correlates of social competence in children's peer relationships. *Merrill-Palmer Quarterly*, 40(1), 1-20.
- Insel, T. R., & Fernald, R. D. (2004). How the brain processes social information: Searching for the social brain. *Annual Review of Neuroscience*, 27, 697-722.
- Kupersmidt, J. B., Coie, J. D., & Dodge, K. A. (1990). The role of poor peer relationships in the development of disorder. In S. R. Asher, & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 274-308). New York: Cambridge University Press.
- Lemerise, E. A. (1997). Patterns of peer acceptance, social status, and social reputation in mixed-age preschool and primary classrooms. *Merrill-Palmer Quarterly*, 43(2), 199-218.

- Lemerise, E. A. (2001). *Emotion and social information processing project manual conducting and scoring the social goals interview*. Unpublished Laboratory Manual, Western Kentucky University.
- Lemerise, E. A., & Arsenio, W. F. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Development*, 71(1), 107 – 118.
- Lemerise, E. A., Fredstrom, B. K., McCormick, B. G., Bowersox, A. L., & Waford, R. (2005). *Do provocateur's emotion displays influences children's social goals and problem-solving*. Manuscript submitted for publication.
- Lemerise, E. A., Gregory, D. S., & Fredstrom, B. K. (2005). The influence of provocateur's emotion displays on the social information processing of children varying in social adjustment and age. *Journal of Experimental Child Psychology*, 90, 344-366.
- Lemerise, E., Harper, B. D., Caverly, S., & Hobgood, C. (1998 March). Mood, social goals, and children's outcome expectations. *Poster presented at Conference on Human Development, Mobile, AL*.
- Mayeux, L., & Cillessen, A. H. N. (2003). Development of social problem-solving in early childhood: Stability, change, and associations with social competence. *The Journal of Genetic Psychology*, 164(2), 153 – 173.
- McFayden-Ketchum, S. A., Bates, J. E., Dodge, K. A., & Pettit, G. S. (1996) Patterns of change in early childhood aggressive-disruptive behavior: Gender differences in predictions from early coercive and affectionate mother-child interactions. *Child Development*, 67, 2417-2433.

- Miller, P. M., Danaher, D. L., & Forbes, D. (1986). Sex-related strategies for coping with interpersonal conflict in children aged five and seven. *Developmental Psychology*, 22(4), 543-548.
- Murphy, B. C., & Eisenberg, N. (1997). Young children's emotionality, regulation and social functioning and their responses when they are targets of a peer's anger. *Social Development*, 6(1), 18 – 35.
- Murphy, B. C., & Eisenberg, N. (2002). An integrative examination of peer conflict: Children's reported goals, emotions, and behaviors. *Social Development*, 11(4), 534-557.
- Pettit, G. S., Dodge, K. A., & Brown, M. M. (1988). Early family experience, social problem-solving patterns, and children's social competence. *Child Development*, 59(1), 107-120.
- Renshaw, P. D., & Asher, S. R. (1983). Children's goals and strategies for social interaction. *Merrill-Palmer Quarterly*, 29, 353-374.
- Siegler, R., Deloache, J., & Eisenberg, N. (2003). Emotional development. *How children develop* (pp. 370 – 408). New York, NY: Worth Publishers.
- Underwood, M. K. (1997). Peer social status and children's understanding of the expression and control of positive and negative emotions. *Merrill-Palmer Quarterly*, 43, 610-634.
- Underwood, M. K., Hurley, J. C., Johanson, C. A., & Mosley, J. E. (1999). An experimental observational investigation of children's responses to peer provocation: Developmental and gender differences in middle childhood. *Child Development*, 70, 1428-1446.

Welsh, J. A., & Bierman, K. L. (1998). Social competence. In J. Kagan & S.B. Gall
(Eds.), *Gale Encyclopedia of Childhood and Adolescence*. Farmington Hills, MI:
The Gale Group.

Appendix A
Importance Rating Scale



Appendix B

Social Cognitive Interviewer protocol

Subject Number: _____ Date: _____ Experimenter: _____

Comprehension check: "What happened in the story?" If child misses the provocation, tell him/her: "Well, the red numbered shirt kid's play-doh bunny got squished. Let's look at it again." Then reshow the segment (hopefully you won't have to do this at all!).

Story No. 5 (Play-Doh)

1. How important would it be for you to . . .

A(2) a) stay away from the other kid? _____

| | | | | |
|------------|-----------|-----------|-----------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not At All | A Little | Important | Pretty | Most Important |
| Important | Important | | Important | Of All |

I(2) b) get back at the other kid? _____

| | | | | |
|------------|-----------|-----------|-----------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not At All | A Little | Important | Pretty | Most Important |
| Important | Important | | Important | Of All |

P(2) c) get along and be friends with the other kid? _____

| | | | | |
|------------|-----------|-----------|-----------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not At All | A Little | Important | Pretty | Most Important |
| Important | Important | | Important | Of All |

A(1) d) stay away from any kind of trouble or problems? _____

| | | | | |
|------------|-----------|-----------|-----------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not At All | A Little | Important | Pretty | Most Important |
| Important | Important | | Important | Of All |

I(1) e) get your own way, look strong? _____

| | | | | |
|------------|-----------|-----------|-----------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not At All | A Little | Important | Pretty | Most Important |
| Important | Important | | Important | Of All |

P(1) f) take care of the problem? _____

| | | | | |
|------------|-----------|-----------|-----------|----------------|
| 1 | 2 | 3 | 4 | 5 |
| Not At All | A Little | Important | Pretty | Most Important |
| Important | Important | | Important | Of All |

Most important goal: _____

2. What would you say or do about this situation if it really happened to you? _____
